The real costs of technology – what agencies and funders should be paying for computers

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Summary:

1. Computers cost a minimum of $250/month/workstation including all direct costs such as networks, replacement, maintenance, technical support and user training. If agencies are not spending that much on managing their technology, they are probably spending more on the indirect costs of wasted time and lost productivity.

2. Funders should provide technology funding as part of program costs in the same way they fund telephones and rent.

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RealWorld Systems has just completed a study for Citizenship and Immigration Canada on technology needs of agencies serving immigrants and refugees in Ontario. Citizenship and Immigration Canada computerized the entire settlement sector in Ontario, spending about $12 million over three years to supply every funded agency with computers, networks, technical support and a state-of-the-art extranet. We were asked to make recommendations on how CIC should invest in the sector over the next few years.

We spent considerable time attempting to identify ways to support the technology requirements of these agencies as efficiently as possible. All of our analyses led us to the conclusion that agencies and funders should assume a minimum amount of investment per workstation in order to manage their technology effectively.

Further, we concluded that funders should provide technology funding directly to agencies as part of their operating expenses, based on the real costs of managing technology. It should be treated as part of overhead expenses, just like telephones and rent.

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Estimating per-workstation funding needs

Research on "Total Cost of Ownership" (TCO)[1] has demonstrated that the initial price of a computer is a small portion of the real costs of supporting it throughout its life.

Total Cost of Ownership (TOC) distinguishes between direct costs of computers, including hardware, software, repair, technical support and administration, and indirect costs, including downtime and loss of staff productivity. For more information on cost breakdowns, see the last section on 'Components of Total Cost of Ownership'.

RealWorld Systems recommended that per-workstation funding be based on direct costs only, since indirect costs are already covered under staff salaries. Indirect costs are 'hidden', because they are the hundreds of hours a year of wasted time as a result of computer crashes, email viruses and network problems.

Our best estimate of the direct costs of managing technology was a minimum of $250/month per workstation for office use.

According to Compugen, citing the Gartner TCO database[2], the lowest cost estimate for managing computer costs in an educational context is $2,500 (US) per user per year, including hardware/software, operation, and administration. This minimum cost reflects all possible best practices and does not cover end user operations or downtime.

A 1997 white paper by IDC analysing TCO in the educational sector estimated direct costs as $2,251 US. They stated that nonprofit organizations spend less on technology

[1] See especially the following web sites for information and best practices on TCO analysis: http://techguide.merit.edu/plantemoran1.htm, http://www.cosn.org/tco/about.html, http://www.compaq.com/tco/bestpractices/ , http://seatmanagement.gsa.gov/download/SeatTco/ and www.educause.edu/ir/library/html/cem9829.html. All of these resources are U.S. based. Compaq offers a software tool to estimate the extent to which an organization is using best practices in managing technology costs and performance at www.compaq.com/tco/snapshottool.html - it's highly recommended. Gartner is the leading research and consulting firm associated with TCO analysis; see www3.gartner.com/4_decision_tools/measurement/decision_tools/tco/tco.html

[2] Personal communication, Maarten Verhaar, Director of TCO Practice at Compugen: See also www.compugen.com/services/tco.htm#.

than businesses for several reasons; charity pricing of software, slower replacement of old computers, less powerful computers, and fewer technical support staff.[3]

Our recommendation of $3,000 CDN per workstation per year is low according to published research, but is within the range currently being used by some innovative Canadian managed service providers, including Baudry Cybernomics. We believe that Canadian nonprofits need up-to-date research on best practices and TCO for their own sector but until then, $3,000/year is a good budget to work with.

It is important to note that the largest potential cost savings from the use of best practices are in the indirect cost category. In other words, a poorly-managed system may seem to cost about the same as a well managed system in terms of obvious direct costs, but will cause great amounts of wasted staff time and lost productivity.

It is also critical that agencies get competent Information Technology support. Those who can't afford to hire their own I.T. staff should hire external consultants or part-timers (using their budget for direct I.T. costs) and assign an internal manager to oversee the technology services. Technology management is not easy, and most agencies will not have the capacity to do it alone.

Components of Total Cost of Ownership

Compaq Corporation's *Total Cost of Ownership Snapshot Report*[4] defines the TCO approach and the cost components that are generally included. The following material is directly excerpted from Compaq's report, with the exception of comments by RealWorld Systems in italics.

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The Total Cost of Ownership (TCO) of a computer system is defined as all of the costs associated with the asset over its entire lifecycle, i.e. acquiring, using and supporting all information technology (IT) assets. TCO includes the cost of all people, processes, and technologies associated with the use of that asset. TCO specifically refers to the cost of owning and operating networked information technology assets: desktops, LANs, and servers in a client/server environment.

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[3] "Understanding the Total Cost and Value of Integrating Technology in School", a white paper sponsored by Apple Computer, 1997, International Data Corporation, www.apple.com/education/k12/leadership/LSWTF/IDC.html

[4] *Compaq Computer Corporation. Total Cost of Ownership Snapshot Report (1999). ftp://ftp.compaq.com/pub/solutions/tco/TCOToolSampleReport.doc*

TCO is split into two types of expenses: Direct and indirect.

Direct IT expenses, those items that are typically budgeted to the IS cost center, such as hardware, software, management labor, operations labor, development and communication fees.

- Hardware and Software (capital expenditures and lease fees for new installations, upgrades, and updates).
- Operations (network, system, and storage administration labor and outsourcing fees, reactive and proactive management tasks).
- Administration (helpdesk, training, purchasing, travel, maintenance and support contracts, and overhead labor).

Indirect IT expenses, those items that are not budgeted and often go unaccounted for in most organizations including end user self and peer support, casual learning, and productivity losses due to downtime.

- End user costs (peer and self support, casual learning, and "futz").
- Downtime (lost productivity due to planned and unplanned outages).

Cost Categories included in Total Cost of Ownership:

Budgeted (Direct expenses) These costs should be included in per-workstation funding		
HW/SW Costs: • **Hardware:** Expensed, Depreciated or Leased • Upgrades • Spares • Supplies **Software:** • Personal Productivity and personal database applications • Business and engineering software • Database, management and development tools • Messaging and groupware • Other software • Network, systems, storage and asset • management software • Service desk management software • Training software	**Operations Costs:** • Technical Services - Clients, Servers, • Network: • Tier II problem resolution • Tier III problem resolution • Traffic management & planning • Performance tuning • User administration (local & logical • A/M/C) • OS Support • Maintenance labor • Software deployment • Application management • HW configuration / re-configuration • HW deployment • Disk and file management • Storage capacity planning • Backup and archiving • Repository management • Planning and Process Management • Account management • Systems research, planning and product management • Evaluation for purchase • Security and virus protection • Business recovery	**Administration Costs:** • Finance and Administration • Supervisory management • IS administrative assistance • Asset management • Budgeting and chargeback • Auditing • Purchasing, procurement & contract • management • Vendor management • IS Training • IS course development • IS training delivery • End User Training • End user course development

	• Database Management and Administration • Service Desk (Tier 0/1)	

Unbudgeted *(Indirect expenses).* *These costs are covered by regular staff salaries and are often 'hidden'. They represent the greatest potential for savings.*	
End User Operations Costs: • Peer support • Casual learning / support • Formal learning • File and data management • Application development • Futz factor • End user metrics • Time seeking peer support • Activity while waiting for resolution	**Downtime Costs:** • Productivity lost to outages of resources